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ABSTRACT

This study was designed as a partial replication and extension of the research on interpersonal problem solving in preschool children by Shure and Spivack. Fifteen well-adjusted and 14 impulsive children from Head Start Centers were administered the Preschool Interpersonal Problem Solving test (PIPS) under either incentive or no incentive conditions. This task measures a child's ability to generate alternatives to two interpersonal problems: (1) how to get a chance to play with a toy being used by another child; and (2) how to avert mother's anger after damaging her property. Children in the incentive conditions: were offered one penny for each new alternative generated. Subsequently, children in both conditions were offered one prosocial and one antisocial solution to each problem and asked to choose the "best" solution. Incentive condition children were given three pennies, which they could trade for a toy, for selecting the prosocial response. In a separate session, all children were administered the Stanford Preschool Internal-External Scale as well as behavioral and story-problem measures of interpersonal trust. Contrary to previous findings, alternative solution thinking was not found to be related to behavioral adjustment in the classroom. Incentive effects were found, particularly for girls and for well-adjusted children. Problem solving ability was found to bear little relationship to either locus of control or interpersonal trust. (Author/SS)

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Interpersonal Problem Solving
in Preschool Aged Children

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Midwestern Psychological Association, St. Louis, May, 1980.

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Interpersonal Problem Solving in Preschool Aged Children

Abstract

This study was designed as a partial replication and extension of the research on interpersonal problem solving in preschool aged children by Shure and Spivack. Fifteen well adjusted and fourteen impulsive children were administered an alternative solution thinking task under either incentive or no incentive conditions. Contrary to previous findings, alternative solution thinking was not found to be related to behavioral adjustment in the classroom. Incentive effects were found, particularly for girls and for well adjusted children. Problem solving ability was found to bear little relationship to either locus of control or interpersonal trust. The present findings suggest the need for further research by independent investigators into the role of alternative solution thinking in the behavioral adjustment of young children.

Interpersonal Problem Solving in Preschool Aged Children

Recent research with disadvantaged, preschool aged children has demonstrated a positive relationship between a young child's ability to generate alternative solutions to interpersonal problems and his level of behavioral adjustment in the classroom. Children who generate few alternatives to problems are significantly more likely to be rated as maladjusted by their teachers than are children who generate many solutions. This ability for alternative solution thinking was found to be independent of a child's general level of intelligence, his facility for the English language and his overall amount of verbalization (Spivack & Shure, 1974).

Shure and Spivack (1974a) have developed a three month training program which was found to enhance alternative solution thinking in young children. Trained children were able to generate more alternatives, more relevant alternatives, and less aggressive alternatives than were their untrained peers. Moreover, improvements in this thinking skill were related to improved behavior in maladjusted children and the maintenance of good behavior in well adjusted children. At a six month follow-up, these cognitive and behavioral improvements were maintained.

In contrast, Sharp (Note 1) reported a failure to find any relationship between alternative solution thinking and behavioral adjustment despite using the same alternative solution thinking measure and the same measure of behavioral adjustment as those used by Spivack and Shure (1974). Sharp devised a second measure of adjustment, the Sharp Behavior Identification Checklist, which was also found to be unrelated to alternative solution thinking. These results were explained by noting that in several of the Shure and Spivack studies, the same teachers who trained the children also rated their behavior during the pre and post-training assessment periods. It was speculated that the teachers' awareness of the intent of the behavioral ratings may have contaminated the results obtained by Shure and Spivack. This study represents an attempt to resolve the discrepancies between the findings

cf Sharp and those of Spivack and Shure.

A second purpose of this study was to examine the nature of alternative solution thinking. Specifically, it was hypothesized that deficits in alternative solution thinking are largely a function of difficulties in the performance of this skill rather than in its acquisition. The existence of performance deficits in young children, in general, and in disadvantaged ones, in particular, have been reported elsewhere (Coates & Hartup, 1969, Schultz & Aurbach, 1971). In the present study, incentives in the form of tangible reinforcers and social praise were used to maximize the problem solving performance of these children. It was further speculated that the performance of alternative solution thinking is mediated by a set of generalized expectancies, including those involving interpersonal trust and feelings of personal control over the environment (cf. Rotter, Chance, & Phares, 1972).

Sixty-two preschoolers from six Head Start Centers in the central Missouri area were rated on the Hahnnemann Preschool Behavior Rating Scale by the child's teacher and a teacher aide. Using the classification system devised by Shure and Spivack (1975), sixteen children were classified as impulsive, thirty-seven as well adjusted, and one as inhibited. Eight children could not be classified because of the disparity between the ratings of the teacher and her aide. The overall inter-rater reliability was .87. The 16 impulsive children were matched by age with 16 well adjusted children. Children in each of the two behavioral categories were randomly assigned to an incentive or no incentive condition. Three of the 32 selected children became unavailable for further study as a result of moving from the area.

Four children were randomly selected from each of the four experimental conditions and pretested on the Preschool Interpersonal Problem Solving (PIPS) test (Shure & Spivack, 1974b). This test measures a child's ability to generate alternatives to two interpersonal problems: 1) how to get a chance to play with a toy being used by another child 2) how to avert mother's anger after damaging her property.

In the experimental phase of the study, all children were administered the PIPS test. Children in the no incentive conditions were administered the test according to the guidelines established in the PIPS test manual. Children in the incentive conditions were offered one penny for each new alternative they generated. After generating their own solutions to the PIPS problems, children in both conditions were offered one prosocial and one antisocial solution to each problem and asked to choose the "best" solution. Incentive condition children were given three pennies for selecting the prosocial response. At the conclusion of testing, children in the incentive condition were allowed to trade in their pennies for a small toy.

In a separate session, all children were administered the Stanford Preschool Internal-External Scale (Mischel, Zeiss, and Zeiss, 1974) as well as two measures of interpersonal trust that were designed specifically for this study. The first measure, the Preschool Interpersonal Trust Survey (PITS) consisted of five stories which portrayed a young child and his mother or a friend in a situation where a promise was made. For each story, the child being tested was asked to guess what would happen next. A behavioral measure of trust was also included in which children were allowed to choose whether to trust the experimenter to hold a food treat for them until after school was dismissed or to receive the treat immediately.

A t-test analysis was performed on the PIPS pretest data. This analysis revealed that adjusted and impulsive children assigned to the incentive conditions were not significantly different from their counterparts in the no incentive conditions in problem solving ability prior to the introduction of the incentive manipulation.

The PIPS posttest data was analyzed in two ways. First, a 2 X 2 X 2 (adjustment X incentive X pretest) factorial analysis of variance was performed on the 29 posttest PIPS scores. Secondly, a 2 X 2 (adjustment X incentive) analysis of covariance was performed on the PIPS posttest scores of the sixteen children who received both the pretest and a posttest. A child's pretest score for the particular

variable studied served as the covariate. In both analyses, the dependent variables under consideration were: number of peer problem solutions, number of mother problem solutions, total number of solutions, and percentage of forceful solutions.

The 2 X 2 X 2 ANOVA revealed no main effect for adjustment on any of the four measures of the PIPS posttest. The data for the 22 children who received the first administration of the PIPS test under standard conditions is presented in Table 1.

Insert Table 1 about here

In contrast to the findings of Shure and Spivack, the present study reveals no differences between well adjusted and impulsive children in their ability to solve interpersonal problems. The 2 X 2 ANACOVA demonstrated that impulsive children ($M = 4.8$) offered more solutions to the posttest peer problem of the PIPS test than did adjusted children ($M = 3.9$), $F(1,8) = 5.61$, $p < .05$. There were no other statistically significant findings.

The 2 X 2 X 2 ANOVA revealed no main effect for incentive on any of the four measures of the PIPS test. The 2 X 2 ANACOVA demonstrated an incentive X adjustment interaction on the total number of solutions generated, $F(1,8) = 12.82$, $p < .01$. A Scheffé post-hoc means test revealed that well adjusted children generated more total solutions to the PIPS test when under incentive conditions ($M = 8.5$) than when under no incentive conditions ($M = 6$), $F(3,12) = 17.36$, $p < .05$. Impulsive children also tended to generate more alternatives when an incentive was offered ($M = 8$) than when it was not ($M = 6.75$), though this difference was not statistically significant.

Both the 2 X 2 X 2 ANOVA and the 2 X 2 ANACOVA demonstrated no main effect for the pretest. There were also no differences found between the four experimenters in their ability to elicit problem solutions from the children.

Sex differences in problem solving ability were also examined. Girls were found to suggest a higher percentage of aggressive solutions to the PIPS problems than did

boys (27% vs. 13%), $F(1.13) = 15.20$, $p < .01$. Several sex X incentive interactions were also found. Girls performed better under incentive conditions than under no incentive conditions whereas boys were largely unaffected by the incentive manipulation. This pattern of results existed for both the number of peer problem solutions, $F(1.13) = 13.34$, $p < .01$ and the number of mother problem solutions, $F(1.13) = 5.51$, $p < .05$. A Scheffé test also revealed that girls in the no incentive condition used a higher percentage of aggressive solutions to the PIPS test than did either girls in the incentive condition or boys in either condition, $F(3.25) = 18.38$, $p < .01$. Finally, the Scheffé test on a sex X adjustment interaction revealed that adjusted girls and impulsive boys tended to use a higher percentage of forceful solutions than did either impulsive girls or adjusted boys, $F(3.25) = 16.13$, $p < .01$.

A Chi-square analysis on the two special problems found no differences between well adjusted (73%) and impulsive (64%) children in their tendency to offer a pro-social alternative when given a choice. Similarly, incentive children (67%) were no more likely to select the prosocial alternative than children in the no incentive condition (71%).

A series of t-tests revealed no significant differences between well adjusted and impulsive children on either the locus of control (SPIES), or the interpersonal trust (PITS) measure. Pearson product correlations demonstrated significant correlations between a child's perception of control over positive events and the number of mother problem solutions, $r(21) = .57$, $p < .01$, the total number of solutions, $r(21) = .66$, $p < .001$, and the child's age, $r(21) = .58$, $p < .01$.

On the behavioral trust measure, only three of the twenty nine children tested offered a trusting response. These three children were all in the well adjusted group.

The present study represents the second failure in as many attempts to independently replicate the Shure and Spivack findings. Several differences exist between the present study and those of Shure and Spivack.

In both studies, the children were disadvantaged and of preschool age. However, the children in this study were primarily white and rural as compared to the Black and urban children studied by Shure and Spivack. The present findings might suggest that the deficit in alternative solution thinking reported by Shure and Spivack is unique to impulsive children who are black and/or from an urban environment. This argument is weakened, however by the fact that Sharp also failed to discover this deficit in impulsive children using a sample of black, urban preschoolers.

Difficulties in the administration of the alternative solution thinking task were also evident. One administration of the PIPS test took approximately 10 to 15 minutes longer than the time allotted by Shure and Spivack. This greater amount of time spent with each child frequently resulted in the need to schedule two sessions to complete both of the PIPS problems. The overall increase in the amount of time spent with each child and the scheduling of two shorter sessions may have facilitated the performance of the impulsive children by minimizing the attention deficit often found in this type of child (Sykes, Douglas, & Morgenstern, 1972).

On the measure of behavioral adjustment, Shure and Spivack consistently identified a subgroup of inhibited children among the children who were rated. In contrast, of the 62 rated children only one child in the present study was classified as inhibited. Until procedures for administration of the research measures are more clearly defined and standardized, it is difficult to determine if the present failure to replicate is due to the procedural problems described or to difficulties with the problem solving notion itself.

The ANACOVA analysis indicates that both well adjusted and impulsive children can generate more alternatives when provided an incentive to do so. It should be reiterated, however, that neither group of children demonstrated a consistent deficit in problem solving ability. Rather, the performance of these children generally improved through the use of an incentive. These findings suggest that Shure and Spivack's three month training program could possibly be shortened

through the appropriate use of incentives. It was particularly interesting that girls were most responsive to the incentive manipulation. The additional finding that girls suggested aggressive solutions to the problems more often than did boys was also notable. Given the small sample size, further replication of these findings is needed.

Little relationship was found between alternative solution thinking and either interpersonal trust or feelings of personal control over the environment. The paucity of measures of interpersonal trust in young children suggests the need for further research in this area.

This study represents the second known failure to replicate the findings of Shure and Spivack. The present study was limited by 1) a small sample size, 2) differences in the subject population, and 3) differences in the administration of the research measures. Further investigations in this area are warranted. Continued failure to replicate Shure and Spivack's findings would suggest the need to re-evaluate the role of alternative solution thinking in the behavioral adjustment of young children.

Reference Notes

1. Sharp, K. C. Paper presented at the meeting of the American Psychological Association, Toronto, August, 1978.

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Table 1
PIPS Total Score

	Well Adjusted	Impulsive
Present	$\bar{X} = 6.54$	$\bar{X} = 6.27$
Study	SD = 2.39	SD = 1.96
	n = 11	n = 11
Shure &	$\bar{X} = 6.77$	$\bar{X} = 3.81$
Spivack	SD = 2.35	SD = 1.81
Studies	n = 231	n = 159